SOME FEATURES OF NEOGENE VOLCANIC STRUCTURES AND METALLOGENIC PRODUCTS FROM VOIA AREA, METALIFERI MOUNTAINS, ROMANIA

BERBELEAC, I.
Institute of Geodynamics, Romanian Academy, Jean-Louis Calderon Str. 19-21, RO-70201 Bucharest, Romania.
E-mail: dorezugr@geodin.ro, nae@fx.ro

Voia area is situated in the central part of the Brad-Sacaramb Tertiary Basin, Metaliferi Mountains (MM), South Apuseni Mountains. This basin is coupled with opening of the Pannonian Basin. It is the result of an extensional prevail period (17–14 Ma) followed by a period (14–11 Ma) of strike-slip faulting with accommodation of extension pull-apart structures (DREW & BERGER, 2001). The subvolcanic intrusions and volcanic rocks form Voia area, as well as in other parts of MM, are preferentially localized in the extensional stepovers relate with this younger deformation period (14–11 Ma).

Voia area represents a region of about 20 km^2. It is built up of Jurassic ophiolites – calc-alkaline volcanics and their covers represented by Upper Jurassic-Paleogene sedimentary formations, by Badenian-Sarmatian sedimentary and volcano-sedimentary formations and by Sarmatian-Pannonian volcanic rocks. At the surface only small patches of Lower Miocene sedimentary and volcano-sedimentary rocks are present. The Pre-Tertiary E–W and NE–SW (reactivated) faults and the Tertiary NW–SE normal and strike-slip faults controlled the Neogene volcanic structures.

Concerning Voia Neogene volcanic activity it is important to note the followings: 1) the Neogene magmatic rocks (11.7-11.54 ± 0.5 Ma, ROSU, 2001) are calc-alkaline in composition and consist of quartz amphibole ± biotite andesites, quartz amphibole biotite ± pyroxene andesites, porphyry microdiorites and amphibole-quartz ± pyroxene andesites; 2) the volcanic structures show a great diversity of forms such as simple volcanoes (Buha, Momeasa, Geamana) and stratovolcanoes (Cetras, Macris) with extrusive domes, lava flows ± talus and avalanche deposits; 3) the volcanic necks describe a circle with some subvolcanic bodies within it like in the Sacaramb area and 4) a multi-stage Voia andesitic-dioritic subvolcanic body (VADSB) and other andesitic dikes have been recognized in some boreholes. The metallogenic processes are dominantly related with high fluid content of Neogene calc-alkaline magmas; the mineral reactions in extensive fluid-rock interactions with basement and cover formations must be taken into account. In spite of the very small area great varieties of the mineralization and alteration types are known in Voia area, such as: 1) pyrite-calcium and calcium-magnesian skarns and hornfelses have been found in some boreholes and formed through heat and pyro- and hydrometamorphism processes, probably close to Eo-Cretaceous intrusions and VADSB; 2) the porphyry copper–gold ore body with a side like porphyry iron ± copper-gold ore (BERBELEAC *et al.*, 1985) and the argillic, propylitic and potassic alteration types genetically related with VADSB; 3) the Mo-base metal brecciated structure presents on the north-western contact of Macris-Cetras andesitic dyke (borehole no. 24); 4) the epithermal HS mineralization and alteration types such as Cu-As-Au quartz-clay minerals-barite veins (Paraul lui Avram) and marcasite-pyrite-clay minerals-gypsum (anhydrite)-alunite-diaspore disseminations and veins in magmatic and sedimentary rocks and 5) the epithermal LS mineralization and alteration types as Au-pyrite disseminations in magmatic and sedimentary rocks, probably Au-base metal veins (borehole no. 17) and pyrite-marcasite breccia body from Lazuri stream. In the Voia area some particular features are emphasized: 1) the abundance of the gypsum-clay minerals-marcasite-pyrite assemblage in argillic alteration zone from the upper part of Voia subvolcanic body and anhydrite-pyrite±base metal sulfides towards the depth of this structure; 2) within VADSB there is a zone with very chloritized rocks, richer in iron oxides and like iron porphyry±Cu-Au ore and 3) there is a genetic link and partial spatial superposition between the skarn occurrences, porphyry Cu-Au and hydrothermal mineralizations.

References

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